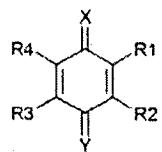


WHAT IS CLAIMED:

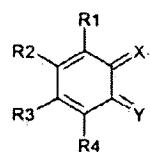
1-25. (Cancelled)

26. A method of doping an organic semiconducting matrix material to vary the electrical properties of the organic semiconducting matrix material comprising depositing an organic mesomeric compound, wherein the mesomeric compound is a quinone or quinone derivative or a 1,3,2-dioxaborine or a 1,3,2-dioxaborine derivative and in that the mesomeric compound, under like evaporation conditions, has a lower volatility than tetrafluorotetracyano-quinonedimethane (F4TCNQ).

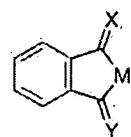
27. The method of according to Claim 1, wherein the mesomeric quinoid compound has a formula selected from the group consisting of



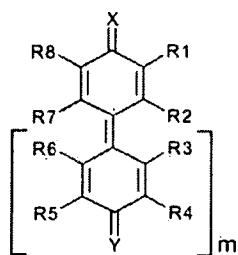
Formula I,



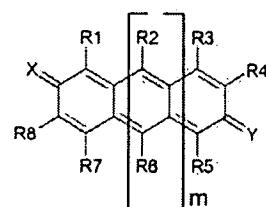
Formula II,



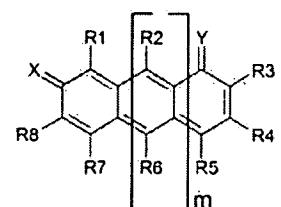
Formula III,



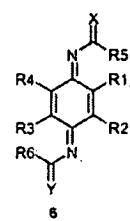
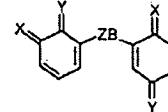
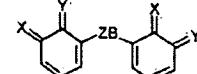
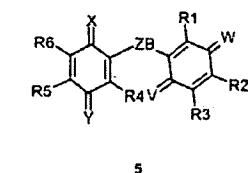
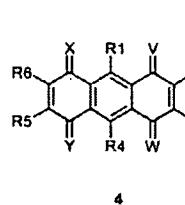
Formula IV,



Formula V,



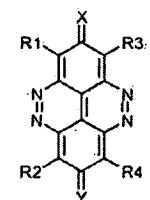
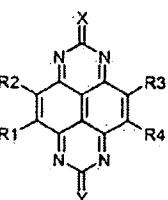
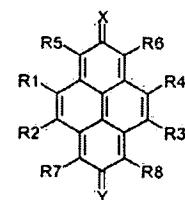
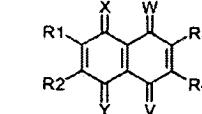
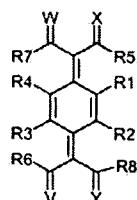
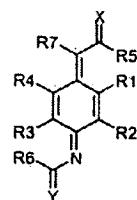
Formula VI,



Formula VII,
XI,

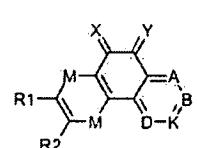
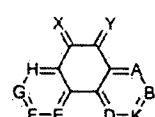
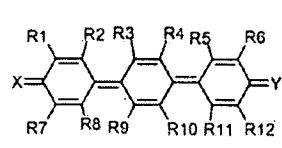
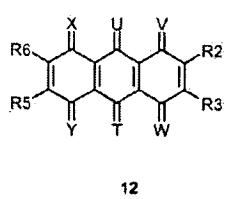
Formula VIII, Formula IX,

Formula X, Formula



Formula XII, Formula XIII,
XVII,

Formula XIV, Formula XV, Formula XVI, Formula



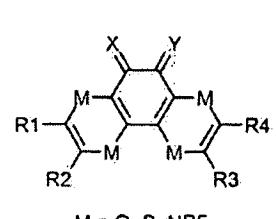
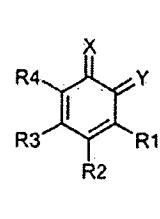
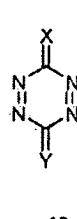
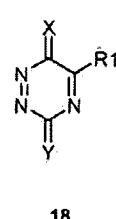
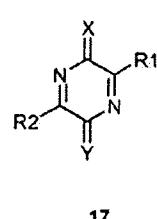
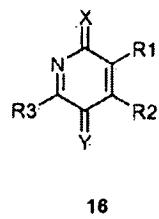
$M = O, S, NR$

$= C = V$

Formula XVIII,

Formula XIX,

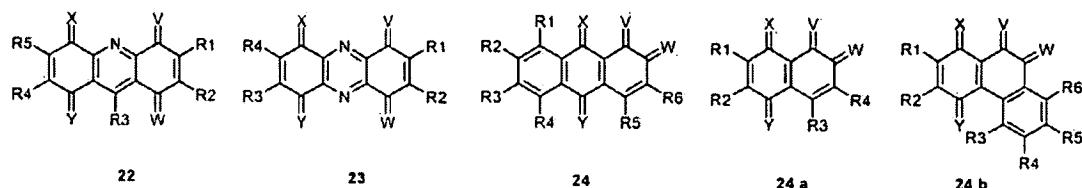
Formula XX, Formula XXI,



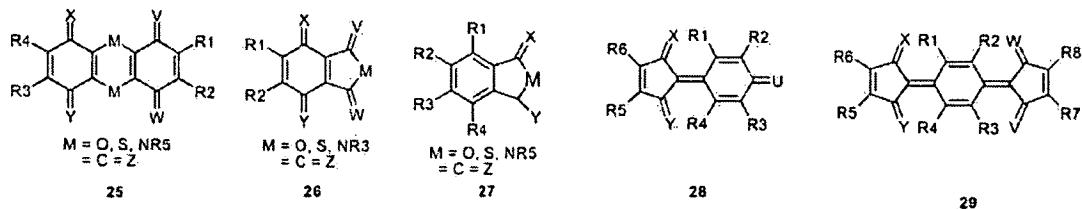
$M = O, S, NR$

$= C = Z$

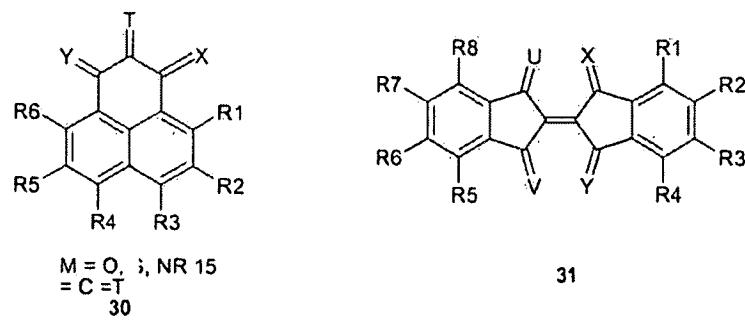
Formula XXII, Formula XXIII, Formula XXIV, Formula XXV, Formula XXVI, Formula XXVII,



Formula XXVIII, Formula XXIX, Formula XXX, Formula XXXI, Formula XXXII,

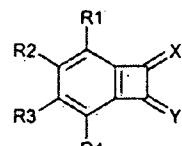
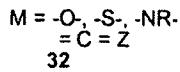
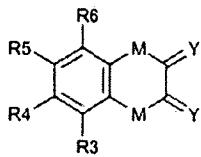


Formula XXXIII, Formula XXXIV, Formula XXXV, Formula XXXVI, Formula XXXVII,



Formula XXXVIII,

Formula XXXIX,



33

Formula XXXX, and

Formula XXXXI,

wherein m = 1, 2, 3, 4 for formula IV,

wherein m = 0, 1, 2, 3, 4 for formula V or VI,

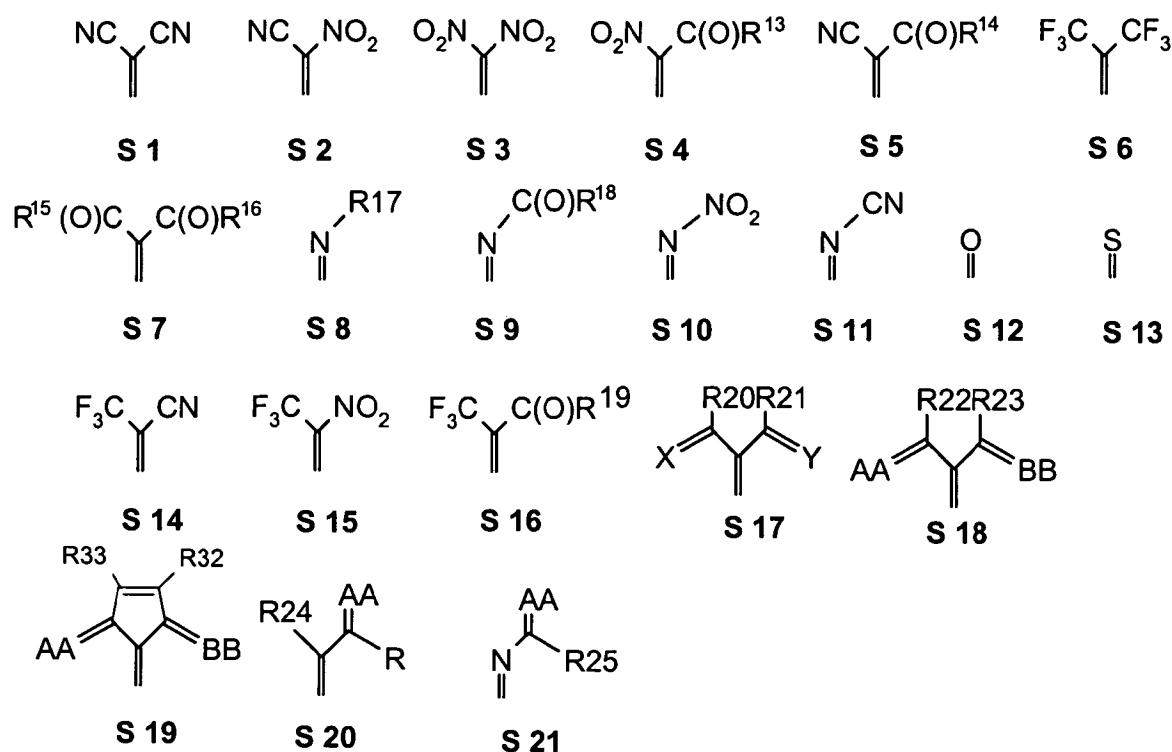
wherein the quinoid aromatic ring may be substituted or unsubstituted (R=H) or may be anellated with at least one aromatic ring,

wherein -M- is a bivalent atom or a group with a bivalent bridge atom and where = T, = U, = V, = X, = Y or = Z are double bond-bonded atoms or groups of atoms with mesomerically and/or inductively attracting residues, and

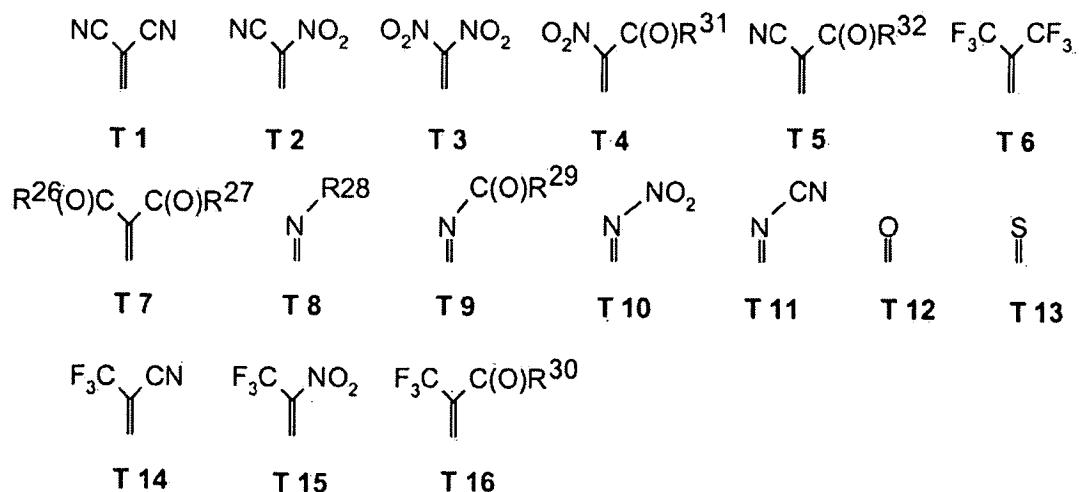
wherein ZB is a divalent atom or a divalent polyatomic bridge.

28. The method according to Claim 27, wherein -M- is selected from the group consisting of -O-, -S-, -NR- and -C(= Z)-;

wherein = T, = U, = v, = W, =X, = Y or = Z are alike or unlike and are selected from the group consisting of



wherein AA is selected from the group consisting of

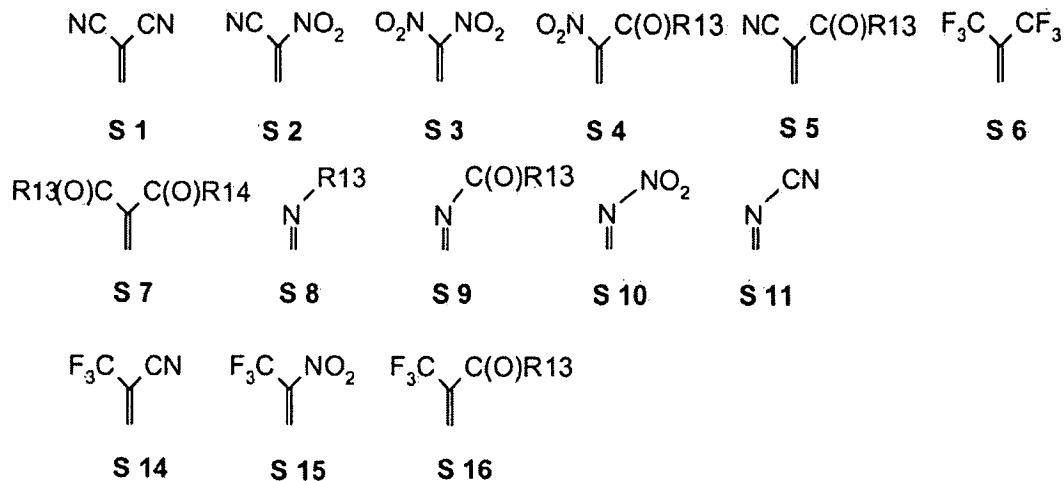


wherein AA may form a multiple-membered ring with another residue R of the compound,

wherein Z in the formulas VIII, IX or X represents a direct bond, or a monoatomic or polyatomic group, which may be saturated or unsaturated, and

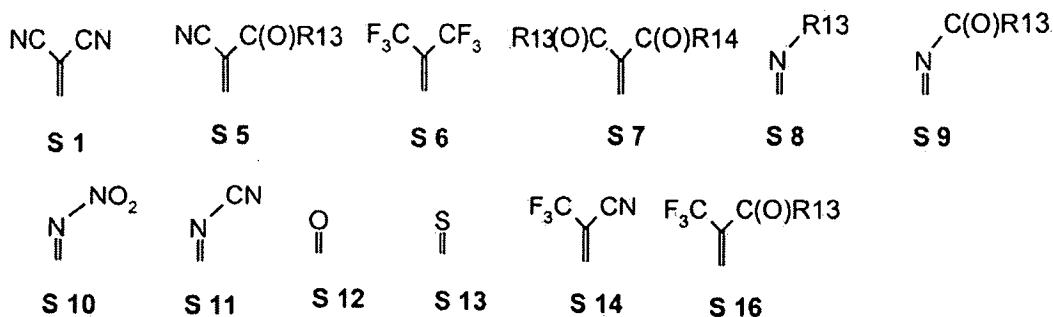
wherein A, B, 0, E, F, G, H, K in the formulas XX and XXI are alike or unlike and are selected from the group = N-, = P-, and = CR-, where R is a hydrogen atom or a residue.

29. The method according to Claim 28, wherein T, U, V, W, X, Y and Z are alike or unlike and are selected from the group consisting of



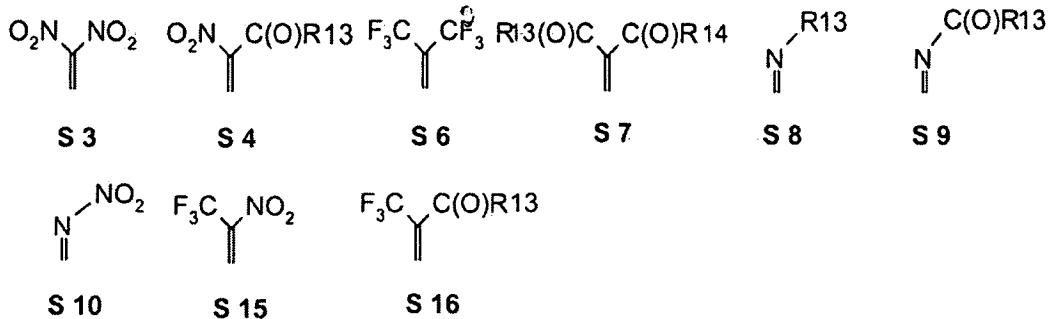
wherein R is an organic residue or hydrogen.

30. The method according to claim 28, wherein T, U, V, W, X, Y and Z are alike or unlike and are selected from the group consisting of



where R is an organic residue or hydrogen.

31. The method according to claim 28, wherein T, U, V, W, X, Y and Z are alike or unlike and are selected from the group consisting of



where R is an organic residue or hydrogen, and

wherein R13 of the group S8 is selected from the group consisting of an organic residue, a hydrogen atom or CF₃.

32. The method according to claim 26, wherein the organic mesomeric compound is a quinone or quinone derivative having at least two non-anellated quinoid systems, wherein the non-anellated quinoid systems are linked together directly or by a bridge - ZB - with 1 to 10 bridge atoms, wherein the bridge atoms selected are carbon atoms, heteroatoms or carbon atoms and heteroatoms.

33. The method according to claim 26, wherein organic mesomeric compound 2, 3, 4, 5 or 6 has quinoid ring systems with 5 or 6 carbon atoms in each instance, which may be at least partially replaced by heteroatoms.

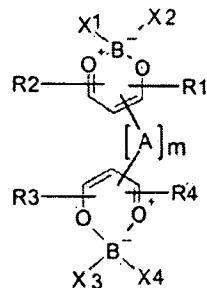
34. The method according to claim 33, wherein at least two of the quinoid ring systems with mesomeric linkage to a larger quinoid system are anellated or linked together mesomerically by an unsaturated bridge.

35. The method according to claim 26, wherein the compound 1, 2, 3, 4, 5 or 6 contains 1,3,2-dioxaborine rings.

36. The method according to claim 26, wherein at least two of the 1,3,2-dioxaborine rings with mesomeric and/or aromatic linkage are anellated or linked together mesomerically by an unsaturated bridge.

37. The method according to claim 36, wherein the at least two of the 1,3,2-dioxaborine rings with mesomeric and/or aromatic linkage are anellated or linked via additional aromatic rings.

38. The method according to claim 26, wherein the mesomeric 1,3,2-dioxaborine compound has (1) the general formula L



30

Formula L

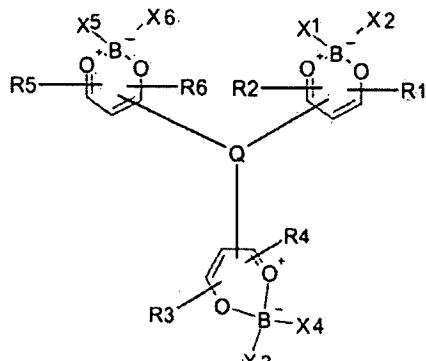
wherein A is a bivalent residue having one or more carbon atoms, which may be partially or completely replaced by heteroatoms,

wherein m = 0 or is a whole number greater than 0,

wherein X is a monodentate ligand, and

wherein the two ligands X may form a bidentate ligand, or

(2) the general formula LI



33

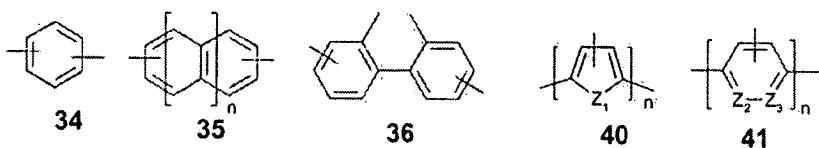
Formula LI

wherein Q is a trivalent residue,

wherein X is a monodentate ligand, and

wherein the two ligands X may form a bidentate ligand.

39. The method according to claim 38, wherein A is selected from the group consisting of



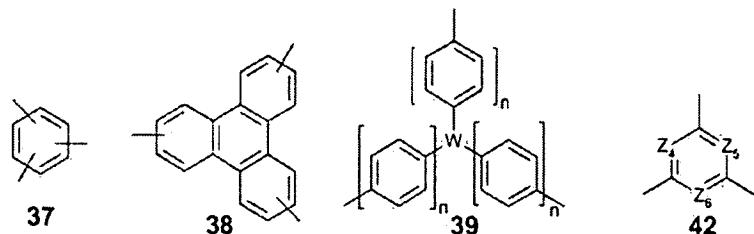
and -(C(R1) = C(R2)-) n,

wherein n is equal to 1, 2, 3, 4, 5 or 6 and -NR1-,

wherein Z₁, Z₂ and Z₃ are bivalent or trivalent atoms, and

wherein one or both residues R1, R2 may form a ring with one or both adjacent 1,3,2-dioxaborine rings.

40. The method according to claim 38, wherein Q is selected from the group consisting of



nitrogen, N(aryl)3, phosphorus and P(aryl)3,

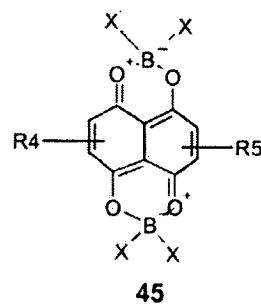
wherein aryl comprises heteroaryl,

wherein Z⁴, Z⁵ and Z⁶ are trivalent atoms, and

wherein W is a trivalent atom or a group of trivalent atoms, and

wherein n may be equal to 0, 1, 2, 3 or 4.

41. The method according to claim 38, wherein the mesomeric 1,3,2-dioxaborine compound has the general formula LII



Formula LII

wherein X is a monodentate ligand,

wherein the two ligands X may form a bidentate ligand, and

wherein R4, R5 are organic residues may have 1,3,2-dioxaborine rings.

42. The method according to claim 26, wherein the organic mesomeric compound 1, 2, 3, 4, 5 or 6 has 6 aryl residues,

wherein said aryl residues are anellated with one another or with one or more quinoid systems or with one or more 1,3,2-dioxaborine rings of the compound.

43. The method according to claim 26, wherein the organic mesomeric compound is selected from the group consisting of N,N'-dicyana-2,3,5,6-tetrafluoro-1,4-quinonediimine, N,N'-dicyano-2,5-dichloro-1,4-quinonediimine, N,N'-dicyano-2,5-dichloro-3,6-difluoro-1,4-quinonediimine, N,N'-dicyano-2,3,5,6,7,8-hexafluoro-1,4-naphthoquinonediimine, 1,4,5,8-tetrahydro-1,4,5,8-tetrathia-2,3,6,7-tetracyanoanthraquinone and 2,2,7,7-tetrafluoro-2,7-dihydro-1,3,6,8-tetraoxa-2,7-diborapentachloro-benzo[e]pyrene.

44. The method according to claim 26, wherein the matrix material is hole-conducting.

45. The method according to claim 26, wherein the matrix material consists partially or completely of a metal phthalocyanine complex, a porphyrin complex, an oligothiophene compound, an oligophenyl compound, an oligophenylenevinylene compound, an oligofluorene compound, a pentacene compound, a compound with a triarylamine unit and/or a spiro-bifluorene compound.

46. The method according to claim 26, wherein the molar doping ratio of dopant to matrix molecule and monomeric unit of a polymeric matrix molecule is between 1:1 and 1:10,000.

47. An organic semiconducting material containing an organic matrix molecule and an organic dopant, wherein the dopant is organic mesomeric compound, wherein the mesomeric compound is a quinone or quinone derivative or a 1,3,2-dioxaborine or a 1,3,2-dioxaborine derivative and in that the mesomeric compound, under like evaporation conditions, has a lower volatility than tetrafluorotetracyanoquinonedimethane (F4TCNQ).

48. The organic semiconducting material according to Claim 47, wherein the molar doping ratio of dopant to matrix molecule and monomeric unit of a polymer matrix molecule is between 1:1 and 1:10,000.

49. A method of preparing an organic semiconducting material containing an organic matrix molecule and an organic dopant according to Claim 47 comprising evaporating the dopant from a precursor compound which upon heating and/or irradiation releases the dopant.

50. A method of preparing an organic semiconducting material containing an organic matrix molecule and an organic dopant according to claim 48 comprising evaporating the dopant from a precursor compound which upon heating and/or irradiation releases the dopant.

51. Electronic component having an organic semiconducting material according to claim 47 wherein the organic semiconducting material is doped with an organic dopant for varying the electronic properties of the semiconducting matrix material.

52. Electronic component having an organic semiconducting material according to claim 48 wherein the organic semiconducting material is doped with an

organic dopant for varying the electronic properties of the semiconducting matrix material.

53. The electronic component according to claim 51 in the form of an organic light-emitting diode (OLEO), a photovoltaic cell, an organic solar cell, an organic diode or an organic field-effect transistor.

54. The electronic component according to claim 52 in the form of an organic light-emitting diode (OLEO), a photovoltaic cell, an organic solar cell, an organic diode or an organic field-effect transistor.